

# A NEW SPECIES OF GENUS *SIMULIUM* FROM XINGDOU MOUNTAIN, CHINA (DIPTERA, SIMULIIDAE)

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**Abstract** This paper deals with a new black fly species *Simulium (Simulium) tumidifilum* sp. nov. from Xingdou Mountain, Hubei China. The type specimens of the new species are deposited in the Department of Biology, Guiyang Medical University and the Department of Biochemistry, Medical School of Hubei University for Nationalities, China.

**Key words** Diptera, *Simulium (Simulium)*, new species, China

*Simulium* Latreille is a large genus of the family Simuliidae, which includes more than 350 known species around the world (Crosskey and Howard, 1997; Adler and Crosskey, 2008). Among them about 90 species were recorded from China (Chen *et al.* 2003; Chen, 2007). In this paper, a new species *Simulium (Simulium) tumidifilum* sp. nov., collected from Xingdou Mountain, Hubei, China, is described. It belongs to *Simulium multistriatum* group.

*Simulium (Simulium) tumidifilum* sp. nov. (Figs 1-13)

**Female.** Body length about 2.6 mm. Wing length about 2.2 mm.

**Head.** Slightly narrower than thorax. Frons brownish black, shiny, covered with several dark hairs. Frontal ratio 5.8: 5.4: 2.8. Frons-head ratio 5.8: 24.5. Clypeus black, whitish pruinose, covered with dark hairs. Antenna composed of 2+9 segments, brown except scape brownish yellow. Maxillary palp composed of 5 segments in the proportion of 3rd, 4th and 5th segments 6.5: 5.4: 13.1, sensory vesicle oblong about 0.32 times length of 3rd segment. Maxilla with about 12 teeth on each side. Mandible with about 27 outer teeth and 10 inner ones. Labium armed with a cluster of numerous minute denticles.

**Thorax.** Scutum black and covered with yellow pubescence. Scutellum brownish black with dark hairs. Postscutellum dark and bare. Pleural membrane and katepisternum bare. Legs. Foreleg brownish black except coxa, trochanter; 5/6 of femur, basal 3/4 of tibia pale yellow. Midleg brownish black except trochanter; basal 4/5 of femur, median large portion of on outer surface of tibia and basal 3/5 of basitarsus pale yellow. Hindleg dark brown except basal 4/5 of

femur, basal 4/5 of tibia, basitarsus and basal 1/2 of 2nd segment, which are pale yellow. Fore basitarsus somewhat dilated distally (W:L= 1.0: 4.5). Hind basitarsus parallel-sided. W:L= 1: 6. Calcipala and pedisulcus distinct. All tarsal claws simple. Wing. Costa with spinules as well as hairs. Subcosta hairy. Basal section of radius bare. Hair tuft of stem vein blackish.

**Abdomen.** Basal scale pale brown, fringe with brown hairs. Terga dark brown except 2nd segment pale yellow. Genitalia. Stemite VIII with about 12 brown long hairs on each side. Anterior gonapophyses tongue-shaped, covered with a few short setae as well as numerous microsetae. Inner margins parallel-sided and widely separated from each other. Genital fork Y-shaped, with widely arms with sclerotized posterolateral ridge but devoid of any projection. Paraproct and cercus of moderate size. Spermatheca elliptical.

**Male.** Body length about 2.7 mm.

**Head.** As wide as thorax. Upper eye with 12 vertical columns and 12 horizontal rows of large facets. 1st flagellar segment of antenna about 1.7 times as long as length of following one. Maxillary palp brown with 5 segments, sensory vesicle about 0.3 times as long as 3rd segment.

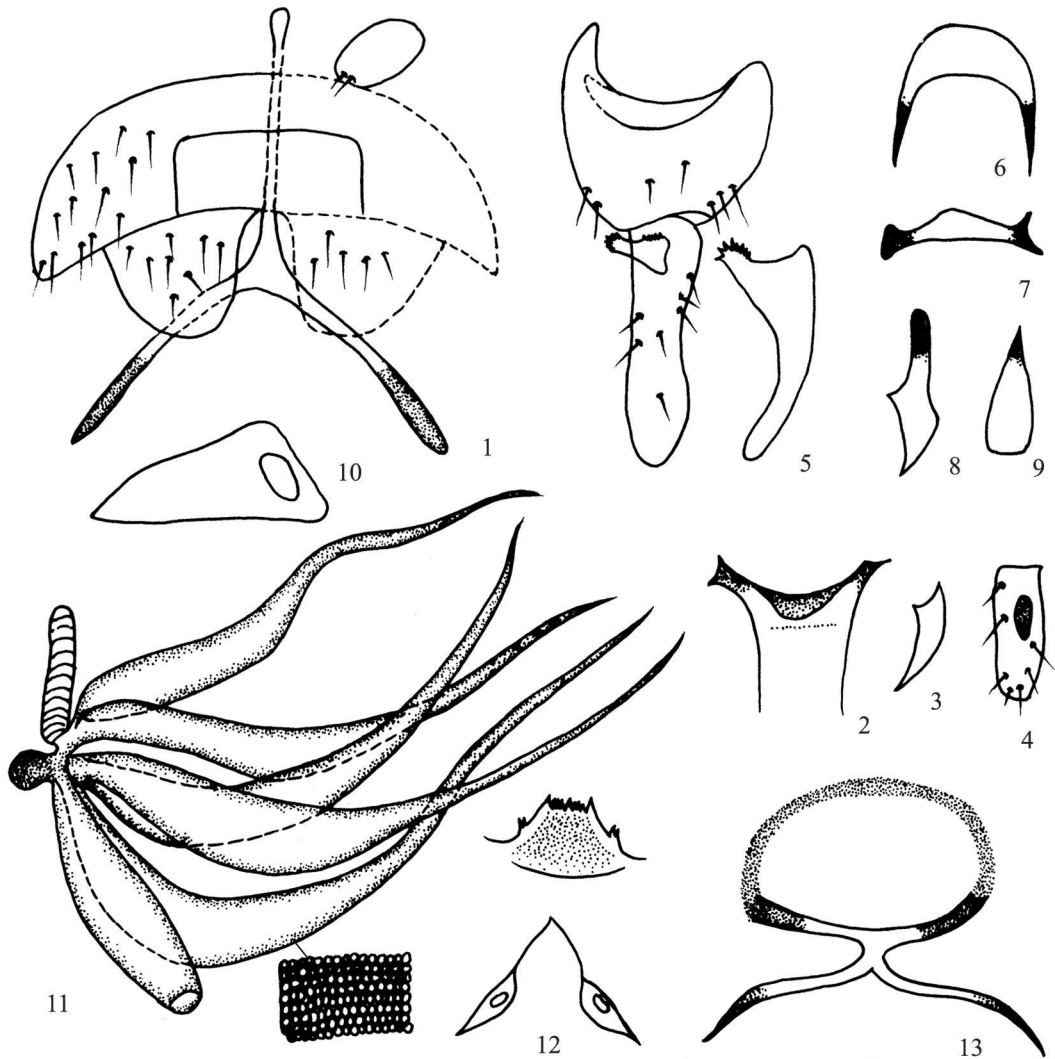
**Thorax.** Nearly same as in female except hind tibia dark brown with large pale yellow patch medially on outer surface, hind basitarsus parallel side with W:L= 1: 5 and subcosta bare.

**Abdomen.** Nearly same as in female. Genitalia. Coxite in ventral view shorter than wide, about 0.5 times length of style. Style elongate, subparallel-sided with rounded end and lacking subterminal spine, sending

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Figs 1-13. *Simulium* (*Simulium*) *tenuifilum* sp. nov. 1. Female genitalia 2. Cribarium. 3. Claw of female 4. Female sensory vesicle 5. Coxite and style of male 6. Ventral plate 7. Ventral plate in lateral view. 8. Ventral plate in end view. 9. Median sclerite 10. Cocoon 11. Pupal filaments 12. Larval head capsule in ventral view. 13. Larval anal sclerite

upwards a horn-like basal protuberance and bearing several small teeth on its end margin. Ventral plate semicircular in shape and with proximal margin convex, plate body smooth and with much long basal arms directed forward. Parameres each with numerous parameral hooks. Median sclerite peg-like, gradually widened distally.

**Pupa.** Body length about 3 mm.

**Head and thorax.** Integument brownish yellow, almost bare except on dorsal and lateral surfaces of posterior 1/2 of thorax which have minute tubercles. Head with 1 facial and 2 frontal pairs of trichomes, all long and split into 2 branches; thoracic trichomes 8 pairs, all short and more or less split into 2-6 branches. Gill with 6 short, inflated filaments, almost sessile, all filaments subequal in length and much dilated in the basal half. Entire base of gill organ with

a distinct pit-like cuficular organ.

**Abdomen.** Terga 3 and 4 each with 4 hooked spines and a short seta on each side; terga 7 and 8 each with spine-combs and a comb-like groups of minute spines in transverse on each side; tergum 9 terminal hooks absent. Sternum 4 with a simple hook submedially on each side; sternum 5 with pair of stout bifid hooks somewhat approximate submedially on each side. Sterna 6 and 7 each with pair of bifid hooks widely spaced on each side. Cocoon. Wall-pocket-shaped, tightly woven, with large antero-lateral window on either side.

**Mature larva.** Body length about 5 mm. Body color yellowish brown. Cephalic apotome with indistinct head spots. Antenna with 4 segments in proportion of 8:4:5:6:3:1:0.4, longer than cephalic fan. Labral fan with about 38 main rays. Mandibular

serrations composed of large and small teeth. Hypostomium with row of 9 apical teeth, of which each corner and median tooth are developed; lateral serration only weakly developed. hypostomial setae 6 in number diverging posteriorly from lateral margins on each side. Postgenal cleft medium, subpear-shaped, pointed anteriorly, about 2 times as long as postgenal bridge. Thoracic and abdominal integument bare. Rectal gill compound, each of 3 lobes with 12-15 finger-like secondary lobules. Anal sclerite of usual X-form, anterior arms about 0.7 times as long as posterior ones; ventral papillae absent. Posterior circlet with about 16 rows of up to 14 hooklets per row.

Holotype ♀, reared from pupa, slidemounted together with its pupal exuvia, was collected on the submerged grass blades adjacent to a waterfall from Xingdou Mountain, Hubei Province (30° 02' N, 109° 10' E; alt 1 000 m), 26 July 2004, by LUO Hong-Bin. Paratypes 2 ♂♂, dissected from pupae, slidemounted and 4 pupae, 8 larvae were taken from same place and on the same day as holotype.

Distribution. Hubei Province, China.

Remarks. This new species seems to fall into *multistriatum* group of *Simulium* (*Simulium*) as defined by Takaoka and Davies (1996). It is allied to *S. (S.) waterfallum* (Zhang *et al.*, 2003) from Hainan Island, China, but differs from the latter species chiefly in the color of legs in the both adults, the shape of anterior

gonapophyses and arms of genital fork lacking any projection directed forwards in the female; the shape of ventral plate and median sclerite in the male; the specific shape of filaments and with pit-like organ at base of gill organ in the pupa and the rectal gill lobes branched in the larva.

**Etymology.** The species name is given for the specific shape of pupal filaments.

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## 星斗山蚋属一新种记述 (双翅目, 蚋科)

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**摘要** 记述湖北省星斗山蚋科一新种膨丝蚋。模式标本存于贵阳医学院生物学教研室和湖北民族学院医学院。

膨丝蚋, 新种 *Simulium* (*Simulium*) *tumidifilum* sp. nov. (图 1~13)

新种隶属于蚋属蚋亚属多义蚋组, 依其呼吸丝的特殊形状命名, 与瀑布蚋 *S. (S.) waterfallum* (张春林等, 2003) 相

**关键词** 双翅目, 蚋属, 蚋亚属, 新种.

中图分类号 Q969.442.9

似, 但根据两性成虫足的颜色, 雄虫生殖腹板和中骨形状, 蛹的呼吸丝形状并在其基部具坑状器以及幼虫肛腮的次生叶数, 新种可与蚋亚属已知种类相区别。

正模 ♀, 副模: 2 ♂♂, 4 蛹, 8 幼虫, 均采自湖北星斗山自然保护区肖家湾瀑布边被水淹没的水草中。